

REMARKS

In response to the Examiner's rejection of Claims 1-3 and 9-14 under 35 USC 112, second paragraph, Claim 1 has been amended to read "immobilization rate". No new matter has been added. Additionally, Claim 3 has been amended in order to make it read better. No new matter has been added. It is respectfully submitted that the currently presented claims are cured of all formal defects.

Claims 1-3, 9, 10, 12 and 13 have been rejected under 35 USC 102(b) as anticipated by or, in the alternative, under 35 USC 103(a) as being obvious over either Kimata or JP 4-202141. Claim 3 has been rejected under 35 USC 103(a) as being unpatentable over either Kimata or JP 4-202141 and further in view of Murakami. Claims 11 and 14 have been rejected under 35 USC 103(a) as being unpatentable over either Kimata or JP 4-202141 in view of Oda. Applicants respectfully traverse these grounds of rejection and urge reconsideration in light of the following comments.

The presently claimed invention is directed to a separating agent for enantiomeric isomers which comprises a polysaccharide derivative having polymerizable functional groups, a polymerizable monomer having polymerizable unsaturated group and a carrier having polymerizable functional groups. The polymerizable polysaccharide derivative, the polymerizable monomer and the carrier are copolymerized with one another to be chemically bound mutually such that the immobilization rate of the polysaccharide derivative is at least 80%. By providing such a polymerization reaction, a high immobilization rate of the polysaccharide derivative is achieved which is at least 80%. By providing such a high immobilization rate of the polysaccharide derivative, the separating agent is provided with an unexpectedly superior separation efficiency and resistance to a solvent. It is respectfully submitted that

the prior art cited by the Examiner does not disclose the presently claimed invention.

As discussed previously, the instant invention was arrived at in order to provide a separating agent which has both a high optical resolving ability which is inherent in polysaccharide derivatives and possesses sufficient solvent resistance. The present inventors discovered that a separating agent comprising a polysaccharide derivative having polymerizable functional groups, a polymerizable monomer having polymerizable unsaturated groups and a carrier having polymerizable functional groups, with the polymerizable polysaccharide derivative, polymerizable monomer and carrier being copolymerized with one another to be chemically bound mutually so that the immobilization rate for the polysaccharide derivative is at least 80%, has both a high separating ability and a high solvent resistance. The prior art cited by the Examiner does not suggest the presently claimed invention.

Kimata et al discloses an optical resolution agent which is prepared by polymerizing a polysaccharide derivative having vinyl groups introduced into the hydroxyl groups thereof through an ester or urethane linkage on the surface of a porous support or by copolymerizing the polysaccharide derivative having vinyl groups introduced therein with a porous support having vinyl groups introduced therein. This reference has no disclosure with respect to a polymerizable monomer also being copolymerized with a polysaccharide derivative having polymerizable functional groups and a carrier having polymerizable functional groups. Therefore, this reference clearly is not a proper reference to be used under 35 USC 102(b). Moreover, this reference does not even present a showing of prima facie obviousness under 35 USC 103(a) as there is no suggestion in this reference as to why one of ordinary skill in the art would also use a polymerizable monomer in addition to the polysaccharide derivative having the vinyl groups with a porous support

having vinyl groups. If there is such a teaching in this reference, the Examiner is respectfully requested to show it. Otherwise, it is respectfully submitted that the rejection of the currently pending claims over the Kimata et al reference clearly is in error.

JP 4-202141 discloses an optical resolving agent which comprises a polysaccharide derivative having a vinyl group introduced at the hydroxyl group site through an ester or urethane bond which is copolymerized with a vinyl group provided on a porous carrier. The disclosure of this reference is similar to the previously discussed reference in that it has no suggestion with respect to providing a polymerizable monomer which participates in a copolymerization reaction between the polysaccharide derivative and the carrier. Therefore, like the previously discussed reference, not only does this reference not qualify as a proper reference under 35 USC 102(b), it does not even make a proper showing of prima facie obviousness under 35 USC 103(a) since this reference does not suggest to one of ordinary skill in the art to add a polymerizable monomer in the copolymerization reaction between the polysaccharide derivative and the carrier.

Murakami et al discloses a separating agent which is prepared through the immobilization of a polysaccharide derivative on a support through cross-linking the polysaccharide derivative molecules exclusively among themselves on the support. Murakami et al has been cited by the Examiner as disclosing that the "6-position is a desirable location to link polysaccharides". However, like the previously discussed references, this reference has no disclosure with respect to the addition of a polymerizable monomer to a polymerization reaction comprising a polysaccharide derivative having polymerizable functional groups and a carrier having polymerizable functional groups to obtain a product in which the polymerizable polysaccharide derivative, the polymerizable monomer and the carrier are

copolymerized with each other to be chemically bound mutually such that the immobilization rate of the polysaccharide derivative is at least 80%. As such, Murakami et al in combination with JP 4-202141 and Kimata et al does not even present a showing of prima facie obviousness under 35 USC 103(a).


The Oda et al reference discloses a packing material comprising a carrier coated with a substance having a separating capacity for high-performance liquid chromatography. The Examiner has cited this reference as showing that cellulose phenylcarbamate is commercialized and widely used because of its optical resolving powers. However, like the previously discussed references, this reference has no suggestion or disclosure that would motivate one of ordinary skill in the art to add a polymerizable monomer to a polymerization reaction between a polysaccharide derivative having polymerizable functional groups and a carrier having polymerizable functional groups in order to obtain a product separating agent in which the immobilization rate of the polysaccharide derivative is at least 80%. Therefore, Applicants once again wish to emphasize that the Examiner has not even made a showing of prima facie obviousness under 35 USC 103(a) using any combination of the references cited during the present prosecution.

As pointed out previously, objective evidence is of record in the present application which further establishes the unobviousness of the presently claimed invention. Comparative Examples 2 and 3 on pages 23 and 24 of the instant specification correspond to the prior art cited by the Examiner in that a polymerizable monomer is not used during the immobilization of the polysaccharide derivative on the carrier. As shown in Table 1 on page 25 of the present specification, the immobilization rate obtained in Comparative Example 2 was only 70% while the immobilization rate in Comparative Example 3 was only 50%. Table 1 in the present specification also illustrates that the separating ability of

the separating agents of the Comparative Examples were inferior to those of Examples 1 and 2, which corresponded to the present invention. These results clearly establish the superiority of the separating agent of the present invention over the prior art separating agent cited by the Examiner. As such, the patentability of the presently claimed invention over the cited prior art has been shown.

Upon allowance of the present application, the Examiner has permission to cancel non-elected Claims 4-8. Reconsideration of the present application and the passing of it to issue is respectfully solicited.

Respectfully submitted,


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